

3. Pollution Control Measures

NAVBASE Kitsap utilizes several different types of control measures to prevent stormwater pollution. These control measures include advance treatment systems, oil/water separators (OWS), swales, stormwater detention basins, catch basin filter socks, regular catch basin cleaning and maintenance, control valves at fueling stations, stormwater BMPs, and monthly inspections of all industrial areas.

3.1. Treatment Devices

NAVBASE Kitsap, Bremerton has several different types of treatment devices. The facility has four locations that incorporate six advanced stormwater treatment units. The Recycle Materials Transfer Site (RMTS), Pier Bravo, and B98-0-01 (Burn Slab) all incorporate a Continuous Deflective Separation (CDS™) treatment device and follow-on media filtration with a Stormwater Management Incorporated's Stormfilter™. The main component of the Stormfilter™ is cartridge media filters; the media in the filters of the RMTS is CFS® Leaf Media and MetalRX™ that are placed in a below-grade vault downstream of the CDS™ unit. Pier Bravo has three CONTECH CDS™ treatment devices with Stormfilter™ cartridge media filters, one at the head of the pier, one on the south end of the pier and one on the north end of the pier. The filter media Pier Bravo and the "Burn Slab" is a Zeolite, Perlite, and Granular activated carbon (ZPG) blend.

A Vortechs™ stormwater treatment device is located in the steelyard at the eastern boundary of Naval Base Kitsap. The unit is designed to remove sediment and oil from stormwater by promoting a swirling motion, which concentrates and entrains pollutants.

Table 3.1-1: Advanced Treatment Systems

Building/Area	Type	Location Description	Treatment Description
Bldg. 959 (RMTS)	CDS™	East of entrance to RMTS	the media in the filters is CFS® Leaf Media and MetalRX™
Pier Bravo	CDS™	South end of Pier	Filter media for these devices is a Zeolite, Perlite, and Granular activated carbon (ZPG) blend.
Pier Bravo	CDS™	North end of Pier	
B98-0-01 (Burn Slab)	CDS™	South of bldg. 98-0-01	Filter media for these devices is a Zeolite, Perlite, and Granular activated carbon (ZPG) blend.
Steel Yard (East of 460)	Vortechs™	East of Bldg. 460 in middle of steel yard	swirling motion, which concentrates and entrains pollutants

3.1.1 Advanced Treatment System Maintenance

All advanced treatment systems require annual vault inspections, at a minimum. For the **Stormfilter™** systems, maintenance is required if greater than 4 inches of sediment on the structure floor or if greater than one-fourth inch of sediment is on top of the cartridges. The cartridges will be replaced when the cartridges are partially submerged and there has been no precipitation in 24-hours and no outflow, as this is a sign that they are plugged and need replacement. Naval Facilities Northwest Public Works performs all maintenance of these systems.

3.2. Oily Water Separators

The facility also incorporates a number of oil/water separators connected to the storm sewer. The oil/water separators minimize release of non-point source petroleum and other pollutants. Most of the separators are of standard design. **A full list of the standard OWS's are in Table 3.1-2.**

Table 3.2-1: OWS Locations

Building/Area	Map Grid	Size	Location Description
Bldg.450 Warehouse	P39	550 gal capacity	Approx. 200' South of NW Corner of Bldg. 450, lid marked "Drain"
Bldg.450 Warehouse	P39	550 gal capacity	Approx. 90' north of the southeast corner of bldg. 450. Rectangular cover E of the crane track.
Bldg.816	R34	Approx. 700 gal capacity	Fuel Oil Pump House,, SW side of Bldg. 816 with lid marked storm drain #2551
Bldg.920	Q25	Approx. 1000 gal capacity	East of Bldg. 920, Oil Handling Bldg., decommissioned and secured
Bldg.990 Commissary	E29	54" Dia. X 8' deep 750 gal cap	Located in manhole at SE corner of Commissary in street 12' N of sidewalk, lids marked "Drain".
Bldg.990 Commissary	E29	54" Dia. X 8' deep 750 gal capacity	Located approx. 6' from above OWS in street.
Bldg.1000 BEQ/Parking	E33	8' x 13' x 8' D	Located in sewer manhole, in sidewalk, off SW corner of Bldg. 1000, beyond parking lot.
Bldg.1001 BEQ/Parking	I36	54" dia. x 11' deep	Lower parking area on SW side of Bldg. 1001, in manhole marked "Drain".
Bldg.1012 Parking Garage	M27	12' x 7' x 8' D	Located in sidewalk at SE corner of Bldg. Approx. 12' x 7' diamond plate cover with 4 locking lids.

Building/Area	Map Grid	Size	Location Description
Bldg. 1017 Parking Lot	I27	7' x 13'	Located in SE corner of Fitness Center parking lot. Approx. 7' wide x 13' long with diamond plate cover.
Olympic Lodge Bld. 1015	I29		
Farragut Gate, Bldg. 1127	N37	100 gal capacity	O/W separator for pop-up barricade
Bremerton Gate, Bldg. 1143	E59		O/W separator for pop-up barricade
Missouri Parking Lot	W20	4' x 6' x 8' D	Located on riprap wall at S end of lot. Diamond Plate cover and locking lid. With associated catch basin just north in parking lot.
Missouri Parking Lot	W20	4' x 6' x 8' D	Located on riprap wall SW end of lot. Diamond Plate cover and locking lid. With associated catch basin just north in parking lot.
Missouri Parking Lot	W20	4' x 6' x 8' D	Located on riprap wall middle of lot. Diamond plate cover and locking lid. With associated catch basin just north in parking lot.
Missouri Parking Lot	W20	4' x 6' x 8' D	Located on riprap wall NE end of lot. Diamond plate cover and locking lid. With associated catch basin just north in parking lot.
Missouri Parking Lot	W20	4' x 6' x 8' D	Located on riprap wall N end of lot. Diamond plate cover and locking lid. With associated catch basin just north in parking lot.
Bld. 1023	K28		There are other OWSs located at the site that go to the sanitary sewer that support the carwash.
Bld. 1107	K29		Parking Garage
Bld. 1027	Q30		Located on the north end of the Fleet Recreation Center
Substation 95	L46		East of DD5
Substation E	L46		East of DD5, north of Bldg. 980
Pier B	U37		3 OWS's- located on Pier B in tandem with advanced water systems. See table 3.1-1
Pier D	V31	Approx. 13' x 7' x 6'7" D	Two OWS's - located north of Pier 'D' one on east side and one on west side.

3.2.1 Oily Water Separator Maintenance

NAVFAC NW performs all maintenance on OWSs within CIA. This entails annual visual inspections and cleaning. NAVFAC NW tracks and maintains their preventive maintenance schedule using the asset management software MAXIMO.

3.3. Swales

There are two different locations of swales, both of which are located outside of the CIA on NAVBASE Kitsap, Bremerton. The design of the swale is to divert stormwater runoff away from impervious surfaces. The first set of swales runs the full length of the Montgomery Parking Lot north of Building 1012. The second swale is located south of Building 433.

3.4. Stormwater Detention Basins

There are three stormwater detention basins located at NAVBASE Kitsap, Bremerton. Detention basins are designed to prevent flooding and erosion and help manage stormwater by temporarily retaining stormwater. The list below provides detention basins size and locations (Table 3.3-1).

Table 3.4-1: Location and Size of Stormwater Detention Basins

Building/Area	Size	Location Description
B/433 Area	Approx. 20' x 40'	Two basins are located East of Building 433 across Barclay Street.
B/1044 Area	Approx. 120' x 50'	Located West of Building 1140.

3.5. Catch Basin Filters

Most of the storm sewer catch basins on the facility have sumps for retaining heavier materials in stormwater. In areas identified as high-risk, filter socks are placed in catch basins based on the potential for contaminants affecting stormwater. Several storm drains also have metal particulate screens with oil-absorbent bags attached. The gasoline service station Building 592 is equipped with this technology.

3.6. Catch Basin Cleaning and Maintenance

Code 106.3 inspects catch basins regularly. NAVFAC NW performs all maintenance on the system in the form of cleaning and filter change outs. NAVFAC NW divides the base into 11 zones for maintenance scheduling. NAVFAC NW inspects and cleans catch basins within each

zone at least yearly. The frequency of the cleaning will depend on the location of the basin, to ensure proper maintenance.

3.7. Control Valves

All fueling stations have control valves on the storm drains. During fueling operations, valves remain shut to prevent spills/leaks from entering the storm drains. The valves will open when no fuel leak or visible sheen is present to prevent contaminants from entering the storm drains.

3.8. Process Water Collection System (PWCS)

While the PWCS collects process waters such as hydroblast water, the day-to-day function is collecting and appropriately routing dry dock stormwater. The PWCS can route collected stormwater to the sanitary sewer, tank for treatment, or Sinclair Inlet via the dry dock drainage outfalls. Typically, the PWCS discharges **“contaminated” stormwater into the** sanitary sewer, until the maximum daily flow limit as imposed by PSNS & IMF’S **State Waste Discharge** Permit. The NPDES permit for the base considers dry dock stormwater as being **“contaminated”** even though dry dock industrial processes are controlled with dry dock BMPs. When the sewer maximum daily flow limit is reached or if the dry dock stormwater turbidity is high (greater than or equal to 100 Nephelometric Turbidity Units), the dry dock stormwater is then routed to tanks for treatment where tanks are available. Pumping dry dock stormwater to the bay is the last option and will only be done when both sewer discharge flow limit and tank capacity has been reached.

The dry docks are equipped with settling basins (sand traps) and troughs for removing heavier particulates entrained in stormwater. Settling capability varies by dry dock due to differing configurations. PSNS & IMF cleans dry dock basins and troughs prior to dry dock flooding.

3.9. External Vessel Industrial Processes

PSNS & IMF employs a variety of environmental control methods designed to minimize contact between external vessel industrial processes and stormwater. The different types of controls employed are as follows:

3.9.1. Containments

Containments refer to constructed areas with a high level of environmental control typically associated with paint removal. The control may be negative pressure ventilation, humidity control, or air filtration. This type of control is primarily for exterior vessel paint removal; there are several methods and types in use.

- For smaller areas, a glove bag or a portable containment system may be used. The portable containment system uses sheeting held in place with extendable poles developed for this application.
- Larger paint removal operations are typically conducted in containments with negative pressure ventilation, air filtration, and humidity control. Containments are designed for a specific application/location and may be supported by staging, plywood/wood, or attached to existing components such as keel blocks. Containments are constructed to prevent the release of dust and prevent water from contacting blast material or waste. Containments are inspected by PSNS & IMF prior to allowing work inside and periodically during use.
- Within containments, paint is removed using a number of methods. Steel grit blasting is commonly used for large areas. The steel grit is collected and reused, which significantly reduces overall waste generation, particularly when compared to single use blasting materials such as copper slag; a process commonly used at many shipyards. PSNS & IMF also uses sponge blasting for paint removal and preparing the surface for new paint.
- For larger, uninterrupted surfaces, PSNS & IMF uses a remotely operated hull crawler. The crawler uses ultra-high pressure water (40-50,000 psi) to remove paint. The wastewater is integrally removed via vacuum, treated, and either recycled back to the blast head or captured for follow-on treatment. Crawlers hold themselves to the hull with magnets or by using the vacuum system, which removes wastewater. A traditional containment system is unnecessary when using a hull crawler. The environmental benefits of crawlers are no potential of fugitive emissions and little waste. PSNS & IMF infrequently uses open-lance high-pressure water blasting when used; watertight catchments are placed/constructed below the open-lance blasting for capturing the wastewater.

3.9.2. Enclosures

Enclosures, on the other hand, refer to a structure that affords a degree of weather protection, which could be a simple covering to keep the rain out of a temporary building. Enclosures do not provide dry blast containment capability.

PSNS & IMF uses enclosures as standard practice on vessel recycling projects in dry dock. The enclosures afford greater worker safety and comfort, a higher degree of process control, and increased environmental protection. Enclosures are typically Tensioned Fabric Structures, which are manufactured structures consisting of arched steel or aluminum frames spaced at regular intervals and covered with a tensioned fabric, typically reinforced PVC. For surface vessels undergoing recycle, PSNS & IMF uses tensioned fabric structures on rails that can be moved and nested to allow crane access. The environmental benefit of enclosures is to keep stormwater from contacting industrial processes thus avoiding contamination of water and enabling more effective clean-up of debris since it stays dry.

3.10. Paint Application

Airless spray painting and manual methods (roller and brush) are the main paint application methods used by PSNS & IMF. Epoxy is the primary paint type in use with anti-fouling coatings being secondary. Paint application shall be accomplished in accordance with dry dock BMP 3 and outside of dry-dock BMP 3. These are listed in Appendix G.

3.11. Metal Cutting Associated with Vessel Recycling

Metal components and hull sections removed from vessels undergoing recycling are placed either on a barge or in a rail car for delivery to the scrap metal merchant. For barge delivery, the metal is removed from the vessel, placed on the barge, and taken directly to the vendor. For rail car delivery, the metal usually requires cutting into smaller pieces. The cutting is done at two indoor facilities, one adjacent to Dry Dock 3 in building 98-0-01 and one in Building 368 (main cutting facility). When cutting is underway in Building 368, the air is processed through four 50,000 cubic feet per minute (cfm) cartridge filter systems for a total of 200,000 cfm capacity. The building 98-0-01 facility is similar but smaller (60,000 cfm).

3.12. Dry Dock Source Control and Cleaning

PSNS & IMF uses a variety of source control and cleaning methods. Listed below are some of the more common controls. Dry dock cleaning uses primarily manual methods such as sweeping and pressure washing. Dry dock cleaning is accomplished using dry dock BMP 1 of Appendix G. For a complete explanation of dry dock stormwater, source controls see Section 3.7 Process Water Collection System (PWCS).

3.13. Bilge Water

Oily wastewater treatment systems (OWTS) treats bilge water from vessels. The combined treatment capacity of the OWTS units currently is 1500 gpm. Effluents from the OWTS units drain to the sanitary sewer per the PSNS & IMF State Waste Discharge Permit. There are a total of 7 OWTS units at PSNS & IMF one at each dry dock and one on Pier B.

3.14. Stormwater and Dry Dock BMPs

See Appendix G for a full list of the Stormwater and Dry Dock BMPs.

3.15. Stormwater Inspections

The NAVBASE Kitsap, Bremerton site is broken up into nine different stormwater zones. Code 106.3 inspects each industrial zone (4, 5, 6, 7, 8, & 9) once per calendar month to and non-industrial zones (1, 2, & 3) once per quarter to ensure no danger of pollution enters the stormwater system. Code 106.3 will notify any found deficiencies during the inspection to the responsible parties. To ensure the deficiencies have been resolved the area is re-inspected. Appendix H contains a copy of the Code 106.3 Stormwater Inspection Sheet and the Stormwater Inspection SOP.

3.16. Employee Training

Employee training is an important part of staying in compliance with stormwater regulations. At NAVBASE Kitsap, Bremerton, stormwater training is provided to employees, contractors, and tenants, both on an annual and periodic basis. The various training methods employed are yearly mandatory training (MT), project daily briefs, Environmental, Safety, and Health (ESH) newsletters, and posters/signage. NAVBASE Kitsap, Bremerton provides training to new employees as well as a yearly refresher. See Appendix I for a full list and examples of employee training.